In re Patent Application of:
LANGE ET AL.
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In the Claims:

1. (CURRENTLY AMENDED) A multimode wavelength division multiplexing (WDM) network transceiver comprising:

a plurality of optical transmitters that receive signals electrically processed at a transceiver of a first wavelength band and ~~transmitting~~ transmit optical communications signals along respective signal paths at a second wavelength band;

a wavelength division multiplexer operatively connected to each optical transmitter for receiving the optical communications signals and wavelength division multiplexing the optical communications signals within the second wavelength band into a multimode wavelength division multiplexed optical communications signal having a wavelength channel spacing less than about 1,000 gigahertz;

a demultiplexer for receiving ~~a multimode~~ the multimode wavelength division multiplexed optical communications signal within the second wavelength band and demultiplexing the signal into a plurality of demultiplexed optical communications signals; and

a plurality of optical receivers each connected to the multiplexer and matched ~~with a~~ with each respective optical transmitter for receiving and detecting the demultiplexed optical communications signal and generating a signal to be output as an optical communications signal contained within the first wavelength band.

2. (ORIGINAL) A network transceiver according to Claim 1, wherein said optical receiver comprises a PIN detector.

3. (ORIGINAL) A network transceiver according to Claim 2, wherein said PIN detector comprises an InGaAS PIN detector.

4. (ORIGINAL) A network transceiver according to Claim 2, wherein said optical receiver further comprises a transimpedance amplifier.

5. (ORIGINAL) A network transceiver according to Claim 1, wherein said optical receiver comprises an Avalanche Photo Diode (APD).

6. (ORIGINAL) A network transceiver according to Claim 4, wherein said APD comprises an InGaAS APD detector.

7. (ORIGINAL) A network transceiver according to Claim 1, wherein said optical transmitter comprises a distributed feedback laser.

8. (ORIGINAL) A network transceiver according to Claim 7, wherein said optical transmitter comprises a thermoelectric cooler and controller circuit.

9. (ORIGINAL) A network transceiver according to Claim 1, and further comprising an attenuator positioned

within a transmit signal channel between each optical transmitter and said multiplexer.

10. (ORIGINAL) A network transceiver according to Claim 9, and further comprising a single mode optical fiber defining a signal channel between said attenuator and said optical transmitter and an optical fiber defining signal channel between said attenuator and said multiplexer.

11. (CURRENTLY AMENDED) A network transceiver according to Claim 1, and further comprising a transceiver electrically connected to each optical transmitter ~~and matched optical receiver~~ for receiving and transmitting an optical communications signal, wherein said transceiver is operative at a first wavelength band and said optical transmitter ~~and matched optical receiver are operative~~ is operative at a second wavelength band.

12. (ORIGINAL) A network transceiver according to Claim 11, wherein said second wavelength band is upconverted from said first wavelength band.

13. (ORIGINAL) A network transceiver according to Claim 1, and further comprising a physical sublayer chip circuit operatively connected to a plurality of optical transmitters and matched optical receivers.

14. (ORIGINAL) A network transceiver according to Claim 13, and further comprising an electrical interface operatively connected to said physical sublayer chip circuit.

15. (ORIGINAL) A network transceiver according to Claim 14, wherein said electrical interface comprises a plurality of RJ-45 jacks for Ethernet 1000 Base-T connection.

16. (ORIGINAL) A network transceiver according to Claim 1, and further comprising a serial/deserializer (SERDES) circuit operatively connected to an optical transmitter and matched optical receiver, a switch circuit operatively connected to said serial/deserializer circuit, and a physical sublayer chip circuit and electrical interface operatively connected to said switch circuit.

17. (ORIGINAL) A network transceiver for processing optical communications signals into a wavelength division multiplexed optical communications signal comprising:

a plurality of transceivers for receiving and transmitting optical communications signals contained at a first wavelength band and processing the optical communications signals as electrical signals;

an optical transmitter operatively connected to each transceiver for receiving the electrical signals from the transceiver and transmitting an optical communications signal at a second wavelength band;

a wavelength division multiplexer operatively connected to the optical transmitters for wavelength division multiplexing the optical communications signals within the second wavelength band onto a multimode fiber output;

a demultiplexer for receiving wavelength division multiplexed optical signals within the second wavelength band

and demultiplexing the optical communications signals into demultiplexed optical communications signals; and

an optical receiver operatively connected to the demultiplexer and each respective transceiver for receiving and detecting a demultiplexed optical communications signal and generating a signal to a respective transceiver to be output as an optical communications signal contained within the first wavelength band.

18. (ORIGINAL) A network transceiver according to Claim 17, wherein said optical receiver comprises a PIN detector.

19. (ORIGINAL) A network transceiver according to Claim 18, wherein said PIN detector comprises an InGaAS PIN detector.

20. (ORIGINAL) A network transceiver according to Claim 18, wherein said optical receiver further comprises a transimpedance amplifier.

21. (ORIGINAL) A network transceiver according to Claim 17, wherein said optical receiver comprises an Avalanche Photo Diode (APD).

22. (ORIGINAL) A network transceiver according to Claim 21, wherein said APD comprises an InGaAS APD detector.

23. (ORIGINAL) A network transceiver according to Claim 17, wherein said optical transmitter comprises a distributed feedback laser.

24. (ORIGINAL) A network transceiver according to Claim 17, wherein said optical transmitter comprises a thermoelectric cooler and controller circuit.

25. (ORIGINAL) An network transceiver according to Claim 17, wherein each transmitter is operative for transmitting the optical communications signal contained within a second wavelength band onto a single mode fiber output.

26. (ORIGINAL) A network transceiver according to Claim 17, and further comprising a single mode optical fiber defining a signal channel between said attenuator and said optical transmitter and an optical fiber defining a signal channel between said attenuator and said wavelength division multiplexer.

27. (ORIGINAL) A network transceiver according to Claim 17, wherein said second wavelength band is upconverted from said first wavelength band.

28. (ORIGINAL) A network transceiver according to Claim 17, wherein a wavelength channel spacing is less than about 1,000 gigahertz.

29-41 (CANCELLED)

42. (CURRENTLY AMENDED) A method of expanding the bandwidth of an existing optical communications network comprising the steps of:

receiving optical communications signals within a plurality of transceivers at a first wavelength band and processing the optical communications signals as electrical signals;

receiving the signals from the plurality of transceivers and transmitting optical communications signals from a plurality of optical transmitters positioned along respective signal channels at a second wavelength band;

wavelength division multiplexing the optical communications signals into a multimode wavelength division multiplexed optical communications signal having a channel spacing less than about 1,000 gigzhertz and within the second wavelength band;

demultiplexing ~~a multimode~~ the multimode wavelength division multiplexed optical communications signal within a demultiplexer at the second wavelength band into a plurality of optical communications signals along respective signal channels; and

receiving and detecting the plurality of optical communications signals within optical receivers that are respectively matched with optical transmitters and generating a signal to be output as an optical communications signal within the first wavelength band.

43. (ORIGINAL) A method according to Claim 42, wherein the step of detecting is within a PIN detector.

44. (ORIGINAL) A method according to Claim 43, wherein the PIN detector comprises an InGaAS detector.

45. (ORIGINAL) A method according to Claim 42, wherein the step of transmitting comprises the step of generating an optical communications signal with a distributed feedback laser.